

# K théorie

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Freddy VAN OYSTAEYEN. — **Algebraic geometry for associative algebras.** — Pure and applied mathematics, vol. 232. — Un vol. broché,  $15,5 \times 23,5$ , de vi, 286 p. — ISBN 0-8247-0424-X. — Prix: US\$145.00. — Marcel Dekker, New York, 2000.

This innovative reference/text facilitates the origin of a noncommutative topology that provides, for the first time, the possibility to define an underlying space where geometric properties can be phrased and studied—resulting in a scheme theory that sustains the duality between algebraic geometry and commutative algebra to the noncommutative level. It constructs the scheme theory from the interaction between graded and filtered algebras appearing as a general deformation principle among geometries. *Algebraic Geometry for Associative Algebras* fully introduces noncommutative topology, deformation of structure schemes, new cohomological methods, homological algebra and regularity conditions, divisor theory using noncommutative valuations, reductions of algebras, microlocalization and quantum sections, formal completion along subvarieties, and more.

Freddy VAN OYSTAEYEN, Manuel SAORIN, (Editors). — **Interactions between ring theory and representations of algebras: proceedings of the conference held in Murcia, Spain.** — Lecture notes in pure and applied mathematics, vol. 210. — Un vol. broché,  $17,5 \times 25,5$ , de viii, 449 p. — ISBN 0-8247-0367-7. — Prix: US\$185.00. — Marcel Dekker, New York, 2000.

Based on a set of lectures and invited papers presented at a recently held meeting in Murcia, Spain, organized by the European Commission's Training and Mobility of Researchers Programme, this monograph contains up-to-date information on the structure of representation theory of groups and algebras and on general ring theoretic methods related to the theory. This title provides a wide selection of international viewpoints on Artin, path, matrix, group, Noetherian semigroup, and Hopf and multiplier Hopf algebras, quantized coordinate and quantum determinantal rings, Maranda's and duality theorems, prime spectra and ideals, and associated primes and weakly associated primes, Cohen-Macaulay, D-Gorenstein, static and  $A_1(k)$ -modules, as well as covers and envelopes of modules, and more.

### ***Catégories, algèbre homologique, cohomologie des groupes***

M. SCOTT OSBORNE. — **Basic homological algebra.** — Graduate texts in mathematics, vol. 196. — Un vol. broché,  $16 \times 24$ , de x, 395 p. — ISBN 0-387-98934-X. — Prix: DM 98.00. — Springer, New York, 2000.

This book is intended for one-quarter, two-quarter, or one-semester courses in homological algebra. The aim is to cover Ext and Tor early and without distraction. It includes several further topics, which can be pursued independently of each other. Many of these, such as Lazard's theorem, long exact sequences in Abelian categories, the Ext product, or the relation between Krull dimension and global dimension, are hard to find elsewhere. The intended audience is second- or third-year graduate students in algebra, algebraic topology, or any other field that uses homological algebra.

### ***K théorie***

A.J. BERRICK and M.E. KEATING. — **Categories and modules: with K-theory in view.** — Cambridge studies in advanced mathematics, vol. 67. — Un vol. relié,  $15,5 \times 23,5$ , de xvii, 361 p. — ISBN 0-521-63276-5. — Prix: £35.00. — Cambridge University Press, Cambridge, 2000.

This book develops aspects of category theory fundamental to the study of algebraic  $K$ -theory. Ring and module theory illustrates category theory which provides insight into more advanced topics in module theory. Starting with categories in general, the text then examines

categories of  $K$ -theory. This leads to study of tensor products and the Morita theory. The categorical approach to localizations and completions of modules is formulated in terms of direct and inverse limits, prompting a discussion of localization of categories in general. Finally, local-global techniques which supply information about modules from their localizations and completions and underlie some interesting applications of  $K$ -theory to number theory and geometry are considered.

A.J. BERRICK and M.E. KEATING. — **An introduction to rings and modules with  $K$ -theory in view.** — Cambridge studies in advanced mathematics, vol. 65. — Un vol. relié, 15×23, de xv, 265 p. — ISBN 0-521-632749. — Prix: £35.00. — Cambridge University Press, Cambridge, 2000.

Starting from definitions, the book introduces fundamental constructions of rings and modules, as direct sums or products, and by exact sequences. It then explores the structure of modules over various types of ring: noncommutative polynomial rings, Artinian rings (both semisimple and not), and Dedekind domains. It also shows how Dedekind domains arise in number theory, and explicitly calculates some rings of integers and their class groups. About 200 exercises complement the text and introduce further topics. This book provides the background material for the authors' companion volume *Categories and Modules*, soon to appear.

## ***Théorie des groupes et généralisations***

David M. ARNOLD. — **Abelian groups and representations of finite partially ordered sets.** — CMS books in mathematics, vol. 2. — Un vol. relié, 16×24, de xii, 244 p. — ISBN 0-387-98982-X. — Prix: DM 159.00. — Springer, New York, 2000.

A recurring theme in a traditional introductory graduate algebra course is the existence and consequences of relationships between different algebraic structures. This is also the theme of this book, an exposition of connections between representations of finite partially ordered sets and Abelian groups. Emphasis is placed throughout on classification, a description of the objects up to isomorphism, and computation of representation type, a measure of when classification is feasible.

M. ASCHBACHER. — **Finite group theory.** — Second edition. — Cambridge studies in advanced mathematics, vol. 10. — Un vol. broché, 15×23, de xi, 304 p. — ISBN 0-521-78675-4. — Prix: £19.95. — Cambridge University Press, Cambridge, 2000.

This book develops the foundations of the theory of finite groups. It can serve as a text for a course on finite groups for students already exposed to a first course in algebra. For the reader with some mathematical sophistication but limited knowledge of finite group theory, the book supplies the basic background necessary to begin to read journal articles in the field. It also provides the specialist in finite group theory with a reference in the foundations of the subject. The second edition has been considerably improved, with a completely rewritten chapter considering the 2-signalizer functor theorem and the addition of an appendix containing solutions to exercises.

Michael ATKINSON, Nick GILBERT, James HOWIE, Steve LINTON, Edmund ROBERTSON, (Editors). — **Computational and geometric aspects of modern algebra.** — London Mathematical Society lecture note series, vol. 275. — Un vol. broché, 15×23, de viii, 279 p. — ISBN 0-521-78889-7. — Prix: £27.95. — Cambridge University Press, Cambridge, 2000.

This book comprises a collection of papers from participants at the ICMS workshop on Computational and Geometric Aspects of Modern Algebra, held at Heriot-Watt University in